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Polyarthritis in Lambs Following Serum Inoculation

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HISTORY

During the spring and summer (1948) outbreaks of lameness in lambs were investigated in several widely separated areas of North Wales. In every instance there was an associated history of the inoculation of lamb dysentery serum at birth, or of pulpy kidney serum when three weeks old. Most of the serum had been supplied to the farmers concerned by a certain travelling salesman, but in a few instances supplies had been received from the local practising veterinary surgeon. As the investigation proceeded, it became evident that the product of a certain manufacturing firm was apparently implicated, since that from other firms or of earlier issue by the same firm did not give rise to lameness. Farmers were convinced that this particular serum was implicated and the circumstantial evidence supported their view.

In about three months after serum inoculation, the incidence of lameness in inoculated lambs was up to 100 per cent. and the death-rate in the region of 25 per cent. At five to six months the death-rate in most of the affected flocks was up to 100 per cent. of serum inoculated lambs. Some farmers had risked turning ewes with lame lambs on to the open mountain in the summer. Others had retained them on the "ffridd" or in-bye. The ultimate result was the same whatever had been done, the less severe conditions on the in-bye serving to prolong the life of the lambs by a few weeks.

CLINICAL OBSERVATIONS

Lambs first showed symptoms at intervals varying from two days to four months after inoculation. Although the effect was not immediately apparent in all cases, every lamb which received an injection of the particular serum eventually became affected. After an initial acute phase, the course of the disease was chronic, the lambs becoming stunted and unthrifty. The severity of the chronic symptoms appeared to vary directly with the period of time which had elapsed since inoculation. The acute form appeared during the first week, and the affected limb, invariably that into which the inoculation was made, was often "carried." There was no local abscess at the site of injection, but in one case a purplish discoloration of the skin inside the thigh was apparent. Stiffness at this stage was most pronounced when the lambs were first disturbed. Enlargement of the joints was just discernible on palpation and in these cases the joints were also hot and painful. The more severely affected young lambs were completely prostrated and had temperatures of 105° to 106° F. with marked constipation. Lambs so affected died during the first week and represented 2 per cent. of all inoculated lambs at this time. After the first seven to ten days, *i.e.*, when the acute phase was over, there usually followed a period of apparent recovery in most of the remaining affected lambs. Symptoms persisted in a small number of lambs, however, and as time progressed this number was gradually increased. Disability and deformity became increasingly severe, and by the time the lambs were three months old, these stricken flocks were pitiful to see. There were poor, weakly, crippled lambs everywhere. Emaciation and retarded growth had resulted in extreme loss of weight. In each lamb several joints were usually affected. These were enlarged and often permanently flexed by fibrous tissue formation. When this happened to knee joints, lambs actually "walked" with their knees in contact with the ground, with consequent erosion of the skin and the admission of secondary infection. Many carried a deformed limb, and where joints in all four legs were involved progression took place by short, mincing steps. One shepherd had sought to prevent the lameness, as he thought, by injecting serum subcutaneously at the base of the tail. The result had been an initial weakness of the hind quarters, similar to sway-back, followed by fibrosis of the intervertebral joints which caused a permanent spinal curvature.

PATHOLOGY

Post-mortem examination of the first few lambs to die gave little indication of the condition. Examination later of an acute case showed the affected joints in the inoculated limb to contain an excess of turbid synovia, with ulceration of the articular cartilages and a small blood clot over the area of erosion. The regional lymphatic glands were enlarged and congested. In the chronic form the periarticular tissues of affected joints were markedly thickened by fibrous-tissue formation. The synovial membrane was considerably indurated and synovial fluid was slightly increased in amount and of a viscous, turbid consistency. There were vascular vegetative fringes at the borders of the articular surfaces, continuous with the inner surface of the membrane. The articular cartilages had small areas of erosion, or characteristc pitting, but these were not present in all cases. In one case a commencing verrucose endocarditis of the left auriculo-ventricular valve was noted.

BACTERIOLOGY

In lambs where joint lesions were present cultural examination was carried out. Synovial fluid was seeded on to 10 per cent. horse blood agar plates and incubated aerobically at 37° C. for 24 hours. In four out of seven cases so examined, an organism was isolated, the characters of which are set out in Table I below. It was identified as *Erysipelothrix rhusiopathie*.

TABLE I

BACTERIOLOGICAL EXAMINATION

Cultural characters	Origin of strains	
	Joints of affected lambs (4 strains)	Heart blood of mice positive to biological test (23 strains)
Surface of 10% horse blood agar	Minute dewdrop-like non-haemolytic clear colonies after incubation at 37° C. overnight. No tendency to increase in size on prolonged incubation.	Ditto
Broth	Uniform turbidity after overnight incubation at 37° C. Organism non-motile. Growth later settling, leaving clear supernatant fluid and granular deposit.	Ditto
Gelatine stab	Characteristic test-tube brush radiating growth without liquefaction of gelatine after three days at room temperature.	Ditto
Morphology	Small Gram-positive capsulated pleomorphic slender bacillus. Filamentous forms in sub-culture films.	Ditto
Biochemical reactions	Very slight acid production in lactose, glucose and saccharose by two strains after two days' incubation at 37° C. Maltose, inulin, mannite, dulcite, salicin, and arabinose showed no change after seven days' incubation at 37° C.	No carbohydrates fermented after seven days incubation at 37° C.

INVESTIGATION AND EXAMINATION OF SERUM

Investigation of the association of serum with the cases revealed that most of it had been purchased from a travelling salesman. The labels bore only his name and a batch number. Later, when serum supplied by practising veterinary surgeons became involved, the material was found to have been produced by a well-known firm. It was subsequently made clear that the travelling salesman had procured his supply from the same firm, so also had a popular firm of "veterinary" chemists. This last-mentioned firm was responsible for the sale of serum connected with one outbreak. Evidence thus showed that the product of the one manufacturing firm was involved.

Samples of both opened and, where possible, unopened bottles of the incriminated serum were obtained for examination. Owing to their high susceptibility to *E. rhusiopathiae* infection, mice were considered to be the laboratory animals of choice for the biological testing of these sera. Initially 1 c.c. of a sample associated with lameness in lambs was injected intraperitoneally into a mouse under aseptic conditions. In two days the mouse was obviously sick, with a rough staring coat, and excessive lachrymation. This exudate became gummy in consistency and eventually caused the eyelids to stick together. The mouse died on the third day and *E. rhusio-*

pathiae was isolated in pure culture from heart blood and spleen. The experiment was repeated, in two mice, with similar results in both. Two mice were, therefore, used in a standard test for all the sera examined. In a few cases, however, the number of mice, and the dose of serum, had to be reduced because the amount of material available was limited. The results of this investigation are set out in Table II. It will be seen that *E. rhusiopathiae* was isolated from both open and unopened bottles. The test was carried out with serum of an earlier issue by this particular firm and that of other firms; all gave persistently negative results.

Some samples of the incriminated serum failed to cause death in mice, but later experience suggested that this was probably due to the use of too small a dose of the serum. It is conceivable that these mice became sick and recovered and by analogy with the manifestation in lambs would have developed a chronic form if they were kept under observation long enough. Sample 156 had to be tested three times and sample 165 twice, each time with increased dosage, before positive results were obtained, and even then the mice had to be killed before they recovered, in order to isolate the organism. This can be explained on the grounds of light contamination of these particular samples, or of attenuated virulence of the contaminating organism. Sample 165 did, in fact, produce a milder disease in lambs which was only precipitated by factors which lowered their body resistance later. One farmer found also that the incidence during the acute phase was considerably reduced by decreasing the dose of serum from the recommended 5 c.c. to 3·5 c.c. The disease appeared later in its chronically progressive form, however, so that the diminution of incidence in this particular flock was only apparent.

Attempts to grow *E. rhusiopathiae* from contaminated serum failed. Cultures were prepared on the surface of 10 per cent. horse blood agar and also by the addition of 1 c.c. of suspected serum to nutrient broth. Saprophytic contaminants from opened bottles of serum were the only organisms that grew after 48 hours' incubation.

TABLE II

BIOLOGICAL EXAMINATION OF SERA

Serial No. of outbreak	*Post-mortem* examination of lambs and isolation of *Erysipelothrix rhusiopathiae*	Origin, batch No. and type of serum	Test serum bottle	Biological test: No. of mice	Biological test: Dose of serum and inoculation route	Result
730	1 lesions — E.R. —	Travelling salesman 139 LD/PK	(i) Opened	1	1 c.c. intraperitoneally	Died 3 days, E.R. recovered in culture
				Rep. 2	1 c.c. "	Both died 5 days, E.R. recovered
			(iii) Unopened	2	1 c.c. "	Lived
737	1 lesions + E.R. +	T.S. 139 LD/PK	(i) Opened	2	1 c.c. intraperitoneally	Lived
			(ii) "	1	1 c.c. "	"
			(iii) "	1	1 c.c. "	Killed, moribund 2 days, E.R. recovered
738	1 lesions — E.R. —	T.S. 139 LD/PK	(i) Opened	2	1 c.c. intraperitoneally	Lived
			(ii) "	2	1 c.c. "	Both died 1 day, E.R. recovered
758		T.S. 139 LD/PK	(i) Opened	2	1 c.c. intraperitoneally	Both died 3 days, E.R. recovered
			(ii) Unopened	2	1 c.c. "	" 5 " "
765	1 lesions + E.R. —	T.S. 139 LD/PK	(i) Unopened	2	1 c.c. intraperitoneally	Both died 3 days, E.R. recovered
			(ii) Opened	2	1 c.c. "	One " 7 " "
						One lived
779		Manufacturing firm 70 P.K.	(i) Unopened	2	1 c.c. intraperitoneally	Lived
			(ii) Opened	1	1 c.c. "	"
			(iii) "	1	1 c.c. "	Died 6 days, E.R. recovered
			(iv) "	1	1 c.c. "	" 8 " "
			(v) "	1	1 c.c. "	Lived
813	1 lesions + E.R. +	M.F. 200 LD/PK	(i) Opened	2	0·5 c.c. intraperitoneally	Both died 4 and 7 days, E.R. recovered
948	1 lesions + E.R. +	M.F., batch No. absent LD/PK	(i) Opened	2	1 c.c. intraperitoneally	One died 6 days, E.R. recovered
						One lived
			(ii) "	2	1 c.c. "	One died 12 days, E.R. recovered
						One lived
1001		T.S. 139 LD/PK	(i) Unopened	2	1 c.c. intraperitoneally	Both died 9 days, E.R. recovered
			(ii) Opened	2	1 c.c. "	" 8 " "
1002		T.S. 139 LD/PK	(i) Opened	1	0·4 c.c. intraperitoneally	Died 8 days, E.R. recovered
			(ii) "	1	0·4 c.c. "	" 9 " *B. coli* contamination
			(iii) "	2	1 c.c. "	Both died 6 days, E.R. recovered
1156		M.F. 200 LD/PK	(i) Opened	2	1 c.c. intraperitoneally	Lived
				Rep. 1	2 c.c. "	"
				1	0·5 c.c. intravenously	"
					1 c.c. intraperitoneally	"
				1	2·5 c.c. "	"
				1	3·0 c.c. "	Killed, sick 5 days, E.R. recovered
1163	1 lesions + E.R. — 1 lesions + E.R. +	T.S. 139 LD/PK	(i) Opened	2	1 c.c. intraperitoneally	Died 4 and 7 days, E.R. recovered
1164		T.S. 139 LD/PK	(i) Opened	2	1 c.c. intraperitoneally	One died 5 days, one lived, E.R. recovered
1165		Veterinary chemists 191 LD/PK	(i) Unopened	2	1 c.c. intraperitoneally	Lived
				Rep. 1	2 c.c. "	Killed, sick 5 days, E.R. recovered
				1	1 c.c. intravenously	Lived
				1	1 c.c. intraperitoneally	"
			(ii) Opened	2	1 c.c. "	"
				Rep. 1	2 c.c. "	"
				1	1 c.c. intravenously	Killed, sick 5 days, E.R. recovered
1540	1 lesions + E.R.	T.S. 139 LD/PK	(i) Opened	1	1 c.c. intraperitoneally	Killed, sick 5 days, E.R. recovered
				1	2 c.c. "	Discarded

DISCUSSION

This is considered to be a very unusual case, in view of the identity of the contaminant. The serious economic loss caused by this contamination of a commercial serum cannot be accurately assessed. The actual financial loss from the death and unthriftiness of lambs and the purchase of useless serum is not the real one. Far more serious is that arising from the deprivation of valuable foundation stock at a time when it was hoped to replace those which were lost during the severe winter of 1946-47. In view of an excellent lambing season in every other respect in 1948, this proved a particularly devastating blow in the flocks which suffered. Interruption of essential rotation of grazing must also be taken into consideration where flockmasters did not choose to risk sending ewes with crippled lambs on to the open mountain during the summer months. This meant that the "ffridd" or in-bye pasture was not rested in readiness for flushing the ewes at tupping time. It is conceivable that a heavy concentration of infected lambs on this land throughout the summer might lead to the establishment of *Erysipelothrix rhusiopathiae* as a soil saprophyte. Since sheep are usually brought down to the "ffridd" for lambing, ear marking, castration and other operations, the possible danger to future generations of lambs must not be disregarded. It was reported by a local practising veterinary surgeon that two young pigs occupying a paddock where affected lambs had previously grazed developed typical clinical swine erysipelas and responded to specific treatment. No pigs had been kept on this small holding for nine years.

The condition manifested in the affected lambs compared very favourably with descriptions of naturally occurring infection with *Erysipelothrix rhusiopathiae* (Cornell & Glover, 1925; Hopkirk & Gill, 1930; Stamp & Watt, 1947.) The reports of these workers suggest that ovine and porcine strains of the organism exist. The appearance of an area of purple discoloration of the skin in one lamb at the site of serum inoculation bears some resemblance to the "Erysipeloid of Rosenbach" in man (King, 1946). The condition is described as it occurs in sheep after cutaneous infection with *E. rhusiopathiae* from fouled sheep dip by Whitton, Harbour & Allan (1948). It is probable that this particular lamb had been injected intradermally with contaminated serum. The results of intravenous and umbilical injection of lambs with suspensions of *E. rhusiopathiae* are described by Marsh (1933). Further work is in progress in an endeavour to type the strains isolated during this investigation, and will form the subject of another paper. This may partly explain the source of the serum contamination. Despite every effort made by the firm concerned, no satisfactory explanation has been found although it was at one time thought that some mistake had been made in the identity of certain serum horses. Spontaneous infection in the horse has been recorded (Paterson & Heatley, 1938), so that it is not impossible for a serum horse to harbour its own infection. The phenol content of ten samples of the serum varied between 0·16 and 0·22 per cent. The sample with the smallest amount proved negative to a single biological test in mice. It is of considerable importance to note that *E. rhusiopathiae* has been found capable of survival and even multiplication in concentrations of phenol which are bacteriostatic or bactericidal to other micro-organisms. (U.S.B.A.I. report, 1937.) It is unlikely, therefore, that the above percentages of phenol in serum would influence the survival of the organism. *E. rhusiopathiae* is also stated to grow well in fresh liquid serum and also in specifically immune serum (Edwards, 1931).

The contamination both of a lamb dysentery serum and of a pulpy kidney serum produced by the firm concerned is explained by the fact that in order to strengthen the former in its *Cl. welchii* epsilon antitoxic fraction, the two were blended. The original contamination seems to have occurred in pulpy kidney serum.

The method of serum sterilisation practised was filtration through a Seitz pad. If contamination had occurred before filtration, it is conceivable that the small cell body of *E. rhusiopathiae*, particularly the smaller pleomorphic forms, could pass the filter. The negative results of cultural tests of sera indicate that most of the contaminating organisms were probably held back. Cultural tests were also carried out at the firm's laboratory as a routine method of testing material for sterility and had been negative when applied to the sera that were found to contain *E. rhusiopathiae*.

Summary

Outbreaks of polyarthritis in lambs traceable to contamination of commercial lamb dysentery and pulpy kidney sera with *Erysipelothrix rhusiopathiae* are described.

Contamination of serum was detectable by mouse biological test but not by cultural examination.

The origin of the contamination and its economic effects are discussed.

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Contributions that Breeding can make to Preventive Medicine

DISCUSSION BY THE CENTRAL VETERINARY SOCIETY*

Dr. A. C. Fraser: The subject is, as I see it, almost entirely genetical and I would just like to remind you that there would appear to be no limit—provided we are not hampered by mundane considerations of time and expense—to what genetics can achieve. After all, genetics is only evolution under temporarily directed control—and evolution has created from the primeval photoplasmic blob such diverse objects as oak trees and elephants, butterflies and birds, horses and veterinary surgeons. All this merely by constant variation—one little variation on another with an occasional jolt from a mutation or a sport. I wish to emphasise the *variations*. Evolution and genetics depend on the presence of variations. We get so used to established breeds and types that we are liable to forget that no two individuals are alike. The geneticist selects and rejects amongst these variants and is able to eliminate, perpetuate or exaggerate the characteristics he requires.

Two points are worth noting: one, that the evolutionary process is rapidly run through in each individual animal in its (as it were) personal development—from the single cell to the complicated 1948 model. This gives the geneticist a clue to the lines of development of the various species and he finds it easier to press on with the established trends than to try new lines.

The other point is that animals showing a similar variation will when bred together produce offspring showing that trend in an exaggerated form.

Our problem to-day is to apply genetics to the prevention of disease. I think we should approach it under two headings: the first, the elimination of hereditary diseases, the second, the possibility of finding and developing infection-resisting lines.

The Elimination of Hereditary Diseases

There are in our stock very few diseases that can be dealt with on the simple genetic lines. Bulldog calves and hernia in pigs have been shown to be recessive characters and can be avoided by care in breeding. With clear-cut characters, such as pig hernia, the mutation can be eliminated in a few generations by the method of progeny testing—the point is that the parents *may* be carrying the defect though not showing it themselves. By breeding them with affected animals it can be decided whether they are or are not carrying the condition and those proved to be free of the character may then safely be used as basic stock to establish a new herd.

Most of the hereditary conditions that bother us—conditions that can be transmitted—are of the multiple factor type and *not* conditions that can be pinned down to a single gene. Under this heading come the hereditary diseases listed in the Horse Breeding Act. There may be differences of opinion as to the root cause of some of these diseases but I think, in the light of our present knowledge, that the system of prohibiting breeding from stallions so affected is a good one. These diseases are cataract, whistling or roaring, ringbone, sidebone, bone spavin, navicular disease, shivering, stringhalt and defective genital organs. I see that restrictions are to be extended to all stallions. Whether the same regulations are to apply I do not know, but I think they should. There are arguments against this view, *e.g.*, a number of well-known blood horses have been roarers; they have stood successfully at stud and have not got more roarers than usual. There are certain other characters which appear to be transmitted—one comes across them in the lines of certain horses: upright joints that are inclined to give trouble; thin soles and weak heels; uncertain temper associated with a wall-eye, and uncertain temper in the females of a line. Some people would add a tendency to break blood vessels, but I consider this to be associated with overstrain

* February, 1948, meeting.

in the individual and not in any way inherited—unless their inherited conformation may be to blame.

The Importance of Conformation.—I have not the time to go fully into the question of the important relationship between conformation and health—it is something akin to *mens sana in corpore sano*—but if you will accept my point that conformation does mean health, then how valuable are the regulations that control breeding sires—the Horse Breeding Act, the bull and boar licensing regulations and, above all, what a valuable contribution is the artificial insemination service. Not only does artificial insemination ensure an excellent quality of sire but it is of great value in reducing the spread of infections—contagious abortion, trichomoniasis, infectious granuloma and so on. The A.I. service has risen to its opportunities and the veterinary profession should be proud of the good work done and the high reputation achieved by those of our members who have devoted themselves to this work. I only wish that its scope could be extended to cover the whole country and I wish it might be extended to the downlands of Wiltshire—where the bail milked herds continue to produce a quantity of mediocre calves. The bail system was not designed with newborn calves in mind and they do not get the two or three days on the cow that makes such a difference. If this difficulty could be got over and if the calves were A.I. calves it would make a big difference to the calf rearing now being carried on on what might literally be called aerodrome proportions. I am sure that better quality calves, the result of better breeding methods, would help to reduce the heavy calf mortality in the first few weeks.

I feel that it is a pity that veterinary surgeons have always been inclined to fight shy of conformation. The idea is prevalent that health and conformation are separate and distinct conditions; that has arisen from the narrow views held on soundness. In the sale of a horse the veterinary surgeon decides if the animal is or is not sound and the purchaser makes up his mind for himself whether he thinks the conformation is to his liking. Until lately this has been exampled in the army where officers of the Remount Department (laymen as far as veterinary knowledge is concerned) selected animals for purchase for the army—these lay remount officers taking with them a veterinary officer to make a technical examination of animals of whose appearance they had approved. I have no wish to cast reflections on the valuable work done by remount officers—I am only too glad to know that the two services are combined and that veterinary surgeons may now have the responsibility, which I think falls truly within their province, of selecting animals on their conformation as well as on their technical soundness. I recently had the great pleasure of listening to Mr. Dawes on the subject of soundness in horses and he was very insistent that conformation concerns soundness, in that an animal's ability to perform useful work depends largely on his make and shape, an animal unable or unlikely to perform useful work being unsound.

Mr. Dawes then proceeded to explain why all horses to the east of Birmingham and most of those to the west were—if not actually unsound—of no value to him for a good day's work.

Conformation is, of course, the realm of the breeder. The range of make and shape, even in that stereotyped species, the horse, is very wide—from the round barrelled S. African ponies to the narrow Bhutani ponies whose chests are so deep that their sternums are level with their knees; from the tiny Shetland to the massive shire; from the porous bone of the Suffolk, to which Mr. Dawes so strongly takes exception, to the ivory-like shins of the Arab. There is plenty of scope for altering conformation.

The feet will serve for example: horses' feet vary from blocky upright to flat and shelly. The flat and shelly feet bruise easily, are more difficult to shoe and render the animal liable to corns and sidebones. The blocky upright foot is often associated with upright joints throughout the limb—a straight shoulder and upright fetlock and pastern which renders the animal liable to a number of complaints: jarred shoulders, ankle bone disease of the Americans, and conditions associated with periostitis. What can the breeder do about this?

Conformation has naturally been altered in the different species of animals according to their special function. The thoroughbred horse in heart and lungs—which may account for the frequency of roaring and epistaxis; the cow has been selected for milk production—the udder and the capacity to breed regularly are our main interest. A neat udder lying close to the body is out of harm's way. The pendulous udder is asking for trouble, dragging in the mud and getting trodden on when the cow is lying down. This is to a certain extent a question of age but conformation is also of great importance. The breeder is going to help us with the introduction of the hornless Ayrshire by crossing in Red Polls and I have great hopes that the Compton experiment will prove successful in producing a breed enhanced in milk production and free of the nuisance due to horns: fighting, bruised udders and torn vulvas.

The Danger of Fat.—Fat may hardly be considered under the heading of conformation, but the breeder certainly has powers of selection controlling the early or late development of fat or the breeding of fat or lean kine.

There are points in favour of the view that fat is detrimental to health. To refer to insurance statistics, in human bodies fat is found to be advantageous up to the age of 15. Thereafter it is an unfavourable factor—the survival-rate average of fat people is below that of the thin ones. The reason probably lies, not in any toxic factor in fat, but in the merely mechanical explanation that the fat replaces tissue of more vital importance. The tissues of vital importance in resistance to disease are those concerned with antibody production and phagocytosis—the liver and the reticulo-endothelial system. Both are visibly congested in fat subjects. It is obvious in the liver and a good view of the reticulo-endothelial tissues can be found in the bone marrow. A long bone split lengthways gives you in a normal animal a mixture of red bone marrow and fat. In your fat animal you can look in vain for the red marrow—the whole hollow of the bone is a plug of fat. I am not suggesting that bone marrow disappears entirely. The blood corpuscles continue to be formed but it is not the same quality of blood: the phagocytes—so important in countering infection—are fewer. In normal cattle the granular polymorphonuclear leucocytes are 65 per cent. In fat bullocks ready for slaughter they may be reduced to 1 per cent. What are the chances of an animal in that condition resisting infection? I have no idea what happens to the antibodies but I have very little doubt that the biochemist would be able to find that they had been pushed out of place too. You must all know of the risk to young cattle of thriving well. In blackleg districts it is the best cattle in the bunch that become infected and die. Why should they so constantly be the victims unless they have some fatal fault—the liver and the marrow not ready for action. This point may have been one of the reasons for success of the departed art of blood letting. The blood letting acts as a stimulus to the blood-producing tissues which have to replace the lost blood and regenerate in the process. Blood letting is a direct stimulus to antibody production. I can give you a modern example, a flock of sheep in which every year the lambs died off until they were docked and castrated. The infection was *Cl. tetani*. One year they were operated on with hot irons, loss of blood thereby being prevented and the deaths from tetanus reached epidemic proportions. Since they have reverted to the knife deaths still occur but cease abruptly as soon as docking and cutting are carried out. The case is quite a clear one to me—an annual outbreak of tetanus stopped by blood letting.

I would just reiterate that if the geneticist is anxious to breed disease-resistant strains he should bear in mind the danger of fat. One question remains unanswered in my mind. Fat in the human subject, according to those financially interested in the human survival rate, is an advantage in the young but not so in the mature and old. This does not seem to apply in animals. In my experience it is the young animal that is doing really well that most readily falls victim to infection.

The Infections

I propose now to discuss the possibility of countering infections by breeding methods.

The first shock one receives is the dictum—there is no gene for disease resistance. The second shock is to realise that there is very little direct transmission of resistance from parent to offspring. This is overcome in the individual, as you know, by secretion of antibodies in the colostrum. The offspring acquires, though it does not inherit, its parents' acquired resistance. There may be some real hereditary resistance among some animals, *e.g.*, what appears to be a natural resistance amongst native cattle in India to piroplasmosis and foot-and-mouth disease. That these animals have a far greater resistance than imported stock to these diseases is indisputable. It would be interesting to know how the resistance is transmitted.

There is plenty of laboratory evidence to show that there is variation in susceptibility and resistance to disease, even within the same group. The classical examples are varying resistance of mice to typhoid and rabbits to tuberculosis.

This subject of resistance to infection—acquired or inherited resistance—is terribly involved. Tuberculosis may be taken as an example.

The genetical statisticians are convinced that in the human being the degree of resistance or susceptibility to tuberculosis is an hereditary factor. The laboratory worker can furnish ample evidence that susceptibility varies widely in standard rabbits but heredity has not been proved. Conformation is probably of some importance in deciding susceptibility. Diet is of proved importance. Exposure to infection is of immense significance. The Oxford hospitals are finding that their young medical and nursing staffs are far less resistant to tuberculosis than they were 20 years ago and they have to arrange extended holidays for them to keep

down the tuberculosis incidence. The explanation of this susceptibility—which they accept—is the more general availability of T.T. milk, depriving the rising generations of doctors and nurses of the small exposures to infection provided in common old-fashioned mixed milk.

In view of factors of this sort—environment, exposure and acquired resistance—complicating the picture, the difficulties of selecting and developing resistant strains to *certain* diseases would seem to be too many to make the problem a practical one.

The connection between health and longevity.—I am not claiming that the parallels will always hold in the animal kingdom, but it may be of interest to see what are the views of those commercially interested in human survival and human health. I want to put before you two propositions—one that longevity is a family characteristic and is hereditary: the other that longevity does imply health. My purpose is to show that if a breeder is looking for disease resistance—not specific resistance, but a general resistance—he can find it by selecting from long-lived families.

That longevity is a family characteristic and is hereditary is shown by the records of the life departments of all the insurance companies. It is accepted as a fact by them and is used in their calculations. At a time when I was particularly interested in pigs I tried to follow up the life histories by families in a herd of 6,000 pigs where the records were very precisely kept and were at my disposal. The deaths by natural causes were heavy but so were the deaths by the knife and the breeding stock was not exempt from fate in the form of a butcher so no figures of value could be extracted.

Possibly something could be proved one way or another as regards thoroughbred horses but careful records are kept only of selected cases—the selection is a natural one based on ability on the racecourse—but the introduction of a heavy selective factor of that sort might completely distort results. The life insurance figures are selective to a certain degree—that life insurance policies are only taken out by a responsible and somewhat cautious cross-section of the community—but the figures cover millions of cases and many millions of money and within the limits set are safely acceptable as proving that longevity is a family characteristic and is hereditary.

Now for the relation between longevity and health. We are trying to pin down health and the conclusion that long life is hereditary is of no value to us unless we can demonstrate that long life implies that the individuals who have lived long have lived more healthily than those who have died earlier. We have to go to pension statistics for this.

The figures are as follows: In any large pension group—for example, a firm employing hundreds of men with a fixed age for retirement—the average time of survival of those who reach the age of retirement is equalled by the average time of survival of those who are pensioned off early on medical grounds.

In figures we might say that with a retiring age of 65, the average pension period of those reaching 65 was 12 years. The average pension period of men pensioned off early would also be 12 years.

In detail the group retiring on age limit at 65 live until $65 + 12 = 77$.

The group retiring on medical grounds at 55 live until $55 + 12 = 67$.

The group retiring on medical grounds at 45 live until $45 + 12 = 57$.

The group retiring on medical grounds at 35 live until $35 + 12 = 47$.

The long-lived groups are obviously the healthy groups and as longevity has been proved to be hereditary it would be good policy to breed for health by breeding from long-lived lines. The application of this to animals will easily show its commercial value, for example, the milking cow, or the breeding sow, where healthy long life means more produce with less overhead expense.

In conclusion, may I repeat my three points, which I put forward not in any way categorically but merely as items for argument:

The Importance of Conformation.
The Danger of Fat.
The Significance of Longevity.

Mr. Fred. T. Day: Animal breeding is essentially commercial, and commercial factors must always guide and dictate the future of our breeds.

What contribution can animal breeding make to preventive medicine?

The evolution of our different breeds and species has been influenced by breeders selecting animals most suited for the purpose for which they were bred, and this has resulted in a slow but steady all-round improvement.

While the commercial factors, ability to race with the thoroughbred, milk yield with dairy cattle and the ability to fatten quickly with the meat animals, have been the breeders' main stimuli, during this process observant men have automatically culled animals which did not reach their expectations, and this indirectly has eliminated many factors contributing to disease.

This process will go on, so it is right to say that any breeding programme designed to improve or even maintain a herd of animals, and to be profitable to the breeder, must automatically contribute to the elimination of disease.

Disease resistant strains of animals occur in all species, but unless this advantage coincides with other commercial assets, they will not be developed and it will not be practical to develop such lines in large animals even on an experimental basis if in doing so, the commercial factors will not be maintained.

Improvement of breeds is necessarily a slow and gradual process, and many of our breeders have reached the stage when maintaining the excellence of their animals is difficult enough, and improvement of the herd as against the production of an outstanding individual animal almost impossible.

The farmers have made use of cross-breeding in many instances as a means of overcoming their difficulties: the mule is bred in climates unsuited to the horse; cross-bred sheep are used to produce a good commercial product on land and in conditions which would not be suited to the pure breed; Zebu cattle have been crossed with European cattle to overcome diseases in some areas. These are all examples of the way in which breeders have contributed to the elimination of factors influencing disease.

Hornlessness in cattle, particularly in the dairy breeds, would contribute much to the elimination of mastitis, and this is another problem which the breeders are tackling to-day.

The Horse Breeding Act, by which a number of conditions are scheduled as hereditary diseases, has done much to rid our horses of conditions which had rendered them useless for their work. Much can be said about many of these conditions—are they really hereditary, does feeding play a part in their development?

It is not a matter of whether they are hereditary, purely and simply, or not; a group of observers in close touch with animal breeding noticed that a percentage of animals suffered from various diseases affecting their usefulness; to eliminate these, they scheduled the conditions as hereditary and prevented animals with these afflictions from breeding; as a result these conditions diminished and nothing but good has resulted.

The next step forward was progeny testing of animals based on the commercial value for which they were kept.

With the thoroughbred, the racecourse test has always been the progeny testing ground.

Unfortunately, progeny testing of our sires to-day is not so good as it used to be. Horses used to be raced from two years up to five and six years. This is ideal as it not only tests the speed and stamina of the animals but also their ability to stand training and race when mature and heavy animals. The reason so many horses are retired to stud before their real value is known is purely a financial one, but it must ultimately have a bad effect on the breed.

With horses and cattle the two main points are longevity linked with usefulness; also, in cattle, good production of milk.

With the meat animals, longevity does not matter, their value lies in their ability to produce muscle and fat in a short time, and to do so economically on the foodstuffs available.

Environment is a great factor in selection for progress in animal breeding; by and large, this mainly means feeding.

Our breeders in the past have fed extravagantly, as this was the only means of segregating animals and pushing them in order to judge their genetic make-up, one against the other.

We do not know sufficient about feeding; to feed extravagantly on an ill-balanced diet can result in much harm, and we were frequently seeing results of this kind which we recognised really without comprehension.

One classical experiment comes to mind to illustrate this. A litter of puppies was divided; both groups were fed on a vitamin deficient diet, one group receiving bare sustenance, the other being fed all they could eat. The first group grew slowly but showed no ill-effects, the second group quickly developed rickets.

Dangers analogous to this always exist when the growth of animals is forced, and it is safer to allow them to develop at a slower rate until we really know more about feeding.

One other point comes to mind relating to longevity, particularly to Dr. Fraser's remarks concerning human life. Every organ of the body is there for a purpose and unless every faculty and organ is exercised in life, it does not function properly and some deterioration results. Thus environment, apart from feeding, is a major factor in longevity, but perhaps more in humans than in animal breeding.

General Discussion

Mr. G. K. Buckler: Dr. Fraser had raised the point of the examination for soundness in conjunction with conformation. At the present moment they were dealing with a different type of client as far as light horses were concerned, who looked to the profession for guidance more than ever before; therefore, it was important for the profession to make sure that they bore in mind both conformation and soundness. He thought it was important for the profession to keep an eye on conformation in order to avoid the "weedy" type of animal becoming too popular. In dairy cattle the udder was important and a poor type of udder often resulted in lack of resistance to infection. He did not know whether they were in a position to advise the breeders as to how they could avoid a breakdown in the natural resistance of dairy animals, or whether they ought to encourage or discourage some of the breed societies who now had high milk production as all the aim.

Mr. C. W. Ottaway: Presumably Dr. Fraser's desire to let blood was associated with a wish to stimulate the blood-forming tissues. But surely it was more rational to stimulate such activity by the injection of a suitable preparation. He could not agree that fat was invariably associated with predisposition to disease; the subcutaneous fat layer of the pig could not be included in this category. Both the opening speakers had referred to the function of individual tissues of the body. They had also mentioned that by selective breeding, particular tissues could be presented at birth in a state fit for specialised development. But this had its dangers, as over-specialisation for one purpose might lead to generalised weakness and so reduce the disease-resisting capabilities of the body.

Mr. H. E. Bywater: He regarded longevity as important in breeding and preventive medicine. If the animal were healthy, and a good worker or producer of food such as meat and milk, and reached an old age there was nothing much wrong and they should pay great attention to that aspect. He placed more importance on conformation than strict soundness. An animal such as a horse, of good conformation, would last at work longer than an animal of bad conformation. He believed that there was an inherent tendency to resist disease in spite of the fact that it was said not to be genetical; there was some factor of disease resistance to be found in families since there were families prone and others resistant to disease. It was well known that there were strains with a tendency to develop undesirable characters—such as scrotal hernia in pigs inherited through the male and female.

Mr. V. Berwyn Jones: For the last two years he had been looking after a number of heavy horses for the railway. He compared the attitude, to limb defects such as had been discussed, of the veterinary practitioner as contrasted with the veterinary surgeon whose work was in a large stud, such as the horses of a railway. On the railway he had seen a large number of horses with ringbone and sidebone which had done long service, for six or seven years, and which had never been lame and were pulling up to two tons on the London cobbles and streets. The importance of good conformation had been brought home to him because they had to buy heavy horses and the breeding of heavy horses was not what it used to be. Horses were now being bought which would not have been looked at 20 years ago.

Mr. G. A. Willis: Dr. Fraser had suggested that by the application of genetics evolution could be planned. It was, however, important to remember the way in which this differed from the process of natural selection. In practical breeding, animals were selected on commercial points and these points were not necessarily those which nature would choose if she had her way. It was very probable that selection on such a basis was frequently in opposition to nature; for instance, as one speaker had pointed out, the cow with the hypertrophied udder seemed to be more prone to mastitis than her forebears. In the breeding of dairy cattle it was preferable to select cows which showed a series of moderately high, evenly spaced lactations rather than those which had just one or two spectacular yields. By selection on this basis they would be choosing animals which showed a consistent breeding history as well as consistent milk yields.

When considering immunity within herds or groups there were considerable difficulties in deciding whether a particular resistance to disease was inherited or was merely due to the fact that the members of the group were subject to the same environmental conditions and the same plane of nutrition. Moreover, any natural resistance amongst members of a herd might be masked by the indiscriminate use of vaccines, etc.: in fact, the use of such agents, in some cases, might be said to be a confession of the failure of our methods of husbandry and hygiene to control the disease.

Mr. Barrett: The opener had suggested that fat in pigs would be an advantage, but he would like to draw attention to the much greater incidence of swine erysipelas in fat pigs. It had been said that the udder of the Friesian cow was somewhat pendulous and in more danger of damage, but it was his impression that in recent years the Friesian had greatly improved. In course of breeding there had been a tendency to produce a much smaller, light boned cow and with a more compact udder. He would like to know if the so-called hermaphroditism among the progeny of the Saanan goat was hereditary but not linked with hornlessness.

Mr. Day: Whatever they thought about fat pigs, it was one of the commercial reasons for which the pig was kept and it was always going to be the criteria of what the breeders wanted—what is the best saleable joint—and that was the answer. That led to the question of whether to vaccinate or not. Again it was a commercial matter. Whatever the ideals, it was what the farmer was compelled to do in certain instances which made him use vaccination or not. Some vaccinated against erysipelas because of loss but others did not find it economic to do it. The fact that they, as veterinary advisers, knew the animals and the environment and the whole background of the herds was the best safeguard in giving a considered opinion on what a man should or should not do. As to hermaphroditism goats, it was a definite genetical factor and it was linked in some breeds with hornlessness. In many cases there were such degrees of hermaphroditism that it was difficult to state a clear line where hermaphroditism ended.

Mr. Barrett: In hermaphroditism he understood there were both sets of sex organs

Mr. Day: It did not matter what sex organs predominated; if both were present and one interfered with the performance of the other, it would be fair to call the animal a hermaphrodite whatever the outward signs. As to the experience with horses and their general management, it was suggested that practitioners saw only clinical cases, but one of the chief points of hereditary disease had been to prevent the breeding of stock and particularly stallions which showed any of the conditions at an early age. The Act did not apply to older animals and when one considered the life of the heavy horse brought to the cities over a period of years one could only expect them to get a thickening of the joint or ringbone. It had been suggested that it might apply to the thoroughbred, but again that raised the question of diseases scheduled as hereditary and of conformation. By and large, conformation was knowing by experience which types of animals were wanted for a particular job; it was a good criterion in the observation of large numbers and that was perhaps a greater criterion for examining horses, whatever the job, than the almost individual check up for diseases which might be transmissible. Many types of conformation could be written off as making the horse unlikely to fit the bill whereas in fact it would pass a test for soundness.

Dr. Fraser: The relationship of conformation to soundness had been raised in the discussion. He would illustrate his point by an experience of his own, referring to a horse he had examined for soundness: he had never seen a more horrible horse but it was sound. He signed the certificate to show that the animal was sound and delivery was taken of the horse. The buyer wrote him a most scurrilous letter because when he got the horse it was no use to him; had the buyer asked for an opinion as to the suitability of the horse for racing this difference would never have arisen. In this particular case the horse changed hands for £25 so the buyer got fair value for his money. Comment thrown in when they examined a horse was often more important than the certificate of soundness. So many people interested in light horses knew nothing technically about them and they approached their veterinary surgeon not needing a certificate of soundness but for his opinion of the value of the horse for the work for which they wanted it and the advice was of far more value than a certificate. One member had expressed concern at the figures he had given of retirement, but he had only used 12 years as a level average. He would repeat that early retirement was almost a lethal factor and those persons sufficiently successful in business to be able to retire would be well advised to take up some sort of active interest so that the body could continue to function in a balanced way.

To concentrate on the udder of the cow upset the breeding capacity as the relationship was so carefully balanced that the development of one led to the retardation of development in the other. Geneticists were controlling evolution and he predicted that more control might lead to specialisation and to destruction. It was not only man that made mistakes in controlling evolution, as many of nature's efforts had become so specialised that they had lost adaptability and perished.

Breeders set goals to aim for and they had to go forward with their programme for improvement of the commercial factors needed in their herds. If some individuals did not come up to expectations then they fell by the wayside, it was always a matter of survival of the fittest and the programme continued with the better animals. They had to appreciate this and fit their veterinary work in line. It was wrong to advise against it.

Mr. McLaughlin: He hated the new bags; the bag of the Ayrshire was very vulnerable. Such a bag tended to get bruised.

Mr. Day: A lot was talked about type, but we did not know what type was. We were likely to go a long way off the mark if we selected animals of fancy type.

CLINICAL COMMUNICATIONS

Impaction of the Reticulum in a First Calf Ayrshire Cow

E. P. BARRETT, M.R.C.V.S., *and* H. A. CRAWSHAW, F.R.C.V.S.

A first-calf pedigree Ayrshire heifer, giving 3 gallons daily, was visited and found to be affected with tympanites—sufficiently severely to justify the use of trocar and cannula. An injection of 5 c.c. of 1 : 1,000 solution of adrenalin was given, and drenches of stomachics and ol. tereb. were prescribed. Recovery took place and was maintained until 14 days later, when the same symptoms recurred. Adrenalin was again injected, together with strychnine ½ gr. Tympanites was not so acute and paracentesis was not resorted to. The appetite now largely disappeared, rumination ceased, and some grunting and grinding of the teeth was observed. The possibility of a foreign body in the wall of the reticulum was considered, but the symptoms were by no means typical. Pain was not acute, the pulse was not unduly accelerated, and the temperature was normal throughout the following seven days. She was kept under observation and medicinal treatment persevered with. On the eighth day she ran a temperature of 103° and there was localised pain over and some suppuration at the point of insertion of the cannula. It seemed probable that the animal would continue to go downhill unless some other steps were taken to prevent it. It was therefore decided to carry out a rumenotomy to explore the reticulum for a foreign body, though it was not expected to find one.

Operation.—This was carried out by the usual technique and anaesthesia. The incision was made about 1 inch in front of the skin fistula. The ingesta in the rumen was of normal consistency, but on attempting to pass the hand into the reticulum, one encountered a dry mass of material, instead of the normal fluid content. It was necessary to use some degree of effort to bale out this accumulation of dry ingesta from the viscus into the rumen.

No other abnormality was encountered and there was no evidence of adhesion of the reticulum to the diaphragm. The incisions in the rumen and abdominal wall were closed in the usual manner. For the four following days, the animal was unwilling to eat or drink, so 4 gallons of saline with a pound of treacle were given daily by stomach tube. Some appetite returned on the fifth day after the operation, and was soon back to normal. In spite of the close proximity of the infected area, associated with the use of trocar and cannula, first intention healing occurred.

The cow had gone dry, so was turned out, three months in calf. She has now calved down and is giving 4 gallons daily.

Observations.—There is no doubt in our minds that the condition from which this animal was suffering was impaction of the reticulum, and this appears to be a sufficiently uncommon condition to be worth recording.

Summary.—An operation on a lactating cow for relief of impaction of the reticulum is described.

MINISTER'S PLEA FOR THE HORSE

In his address at Dorchester, to which we made brief reference in a recent issue, Mr. Tom Williams, Minister of Agriculture, made a plea for the revival of the farm horse. The Ministry of Agriculture, he said, were particularly concerned over the fall in the breeding figures. There was a place for both tractor and horse on the farm.

The Minister said that it had been suggested that the Ministry should assume greater power to control the slaughter of horses and trade in horseflesh. From the agricultural point of view this was tackling the problem from the wrong end; the best way of saving a horse from the knackers was to make certain there was a job for him on the farm.

"My department is already in consultation with the various interested bodies to see what can be done to stimulate interest in draught horses on the farm. In the meantime I would advise farmers to obtain and train replacements in good time before their present horses come to the end of their working life."

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The Wallingford, Berks., Town Council have decided to support the Council of Justice to Animals and the Humane Slaughter Association in their efforts to persuade the Government to reform the present Jewish and Mohammedan method of slaughtering by making it illegal to draw blood before stunning animals.—*Meat Trades Journal.*

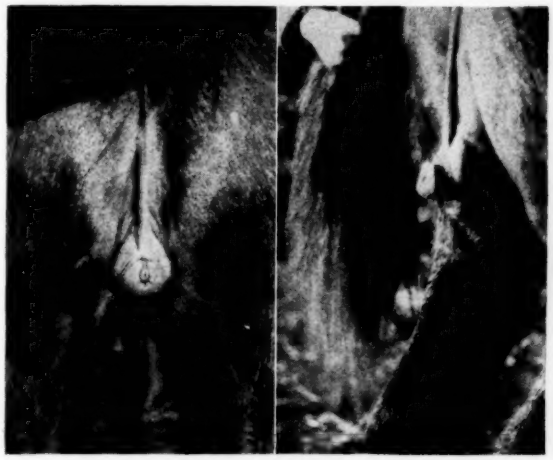
A Case of Hermaphroditism in a Carthorse

P. CROSFIELD, M.A., M.R.C.V.S.
Chipping Norton
and
T. A. R. CHIPPERFIELD, B.Sc., M.R.C.V.S.
Crowborough

Subject.—Shire-bred cart horse, five years old, "quiet in all gears."

The perinaeum gave the appearance of a vulva the commissures of which were closed, ending in a fully formed penis some 5 in. long, projecting backwards. There was a small undeveloped udder with recognisable teats in the normal position, but no trace of a scrotum could be detected.

The opportunity to make a *post-mortem* examination has not yet arisen.



Trivia

Life in the eastern zone of Germany has its lighter side, which, however, does not conceal the severities of the control in force there and the devices resorted to by its victims to circumvent it. A doctor with a large rural practice, relates that he was visited recently by a peasant woman, who asked to speak to him privately. She herself was not ill, she said, but could the doctor give her a sleeping-draught for her pig, which she wished to have slaughtered.

The doctor asked why. The woman explained that she wanted to kill the pig "black," and that its squeals would betray her crime to the "people's police" and others. She hoped that by putting the pig to sleep it could be slaughtered in quietness. The doctor declined her request on the grounds first, that as a loyal citizen he could not aid and abet her in the commission of an offence, and secondly, that the meat of a pig killed under a sleeping-draught might be dangerous for human consumption. The woman left disconsolate.—Berlin Correspondent of *The Times.*

. . . . . .

When Albert Eggett, 78, a carter, of Heathfield Road, Fleetwood, Lancashire, was ordered at Fleetwood to keep his black and white sheepdog under proper control, he said, "Why, my dog even puts the kettle on for me every morning."

The Chairman.—What do you mean?—Well, I leave an electric kettle full of water downstairs before I go to bed each night and in the morning she pushes down the electric switch with her paw and then comes upstairs to waken me with her barking when the kettle is boiling.

. . . . . .

"Every woman by whom or on whose behalf a claim for maternity benefit is made shall furnish evidence that she has been, or that it is to be expected that she will be, confined by means of a certificate given in accordance with the rules set out in Part II of the said Schedule . . ."—*Statutory Instruments*, 1948, No. 1175, para. 2.

If this new method of midwifery is included in *The New Gynaecology* to be issued by the Stationery Office, it would be wise to order your copy now. It sounds like a jolly easy way of earning your £4 14s. 6d.—*The Lancet.*

ABSTRACTS

[**Studies on** *Str. agalactiae* **Infection.** I.—Infection of the Chick Embryo and Mouse. II.—Relative Potencies of the Common Sulphonamides in the Chick Embryo and Mouse. III.—The Relative Potencies of Sulphanilamide and Other Derivatives against *Str. agalactiae* Infection in the Chick Embryo and Mouse. IV.—Attempts to Produce Immunity in the Mouse. Francis, J., Peters, J. M., & Davies, O. L. (1947.) *J. comp. Path.* **57.** 144-173.]

These articles describe the effect of various drugs on *Str. agalactiae* infection in the chick embryo. The pathological changes in the chick embryo are described with particular reference to the tendency of the streptococci to localise on the lining of the blood vessels. Mice were also infected by a strain passaged through chick embryos and then through mice. The effect of various drugs was assessed in eggs and in mice. In the former the drug to be tested was added one hour after infection; in the latter it was given *per os* one hour before infection. Both methods yielded comparable results for sulphanilamide, sulphathiazole, sulphapyridine, "3445," sulphamezathine, sulphadiazine and sulphone, but discrepancies were observed in the group of soluble sulphonamides (sulphone E.O.S., solupyridine, soluseptasine). Summarising their results, the authors state that sulphone is the only sulphonamide that is more potent than sulphanilamide itself. In the final article Francis records failure to produce an immunity in the mouse by vaccination with a non-virulent mouse strain of *Str. agalactiae*.

P. S. W.

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[**Experimental Study of Johne's Disease in Goats.** Levi, M. L. (1948.) *J. comp. Path.* **58.** 38.]

A number of young goats were fed with Johne's bacilli, either in the form of affected bovine intestinal mucosa, or as pure cultures. The consequent infections were studied in detail over a long period and the original paper should be consulted by those interested. It was found that the animals rarely gave a reaction to mammalian tuberculin, and that johnin, either heat concentrated or in the form of P.P.D., applied by the double intradermal method, was superior to avian tuberculin in diagnosis. Johne's bacilli were eliminated in the faeces of infected goats, not only during the clinical stage of the disease but also during the period of incubation.

Histologically, the lesions in goats were similar to those seen in cattle, but in nine of 18 clinically affected goats caseous or calcified nodules were present in the mesenteric lymph nodes.

A. W. T.

N.V.M.A. Membership Subscription

The attention of members is drawn to the following Article of Association of the N.V.M.A.:—

> **35. During the first week of March in each year, notice shall be sent to all members whose subscriptions shall be unpaid. Should the subscription of any member remain unpaid by the 30th day of June, he shall cease to be entitled to receive the publications of the Association or to attend or vote at any General Meeting but shall remain legally liable for his subscription. If the subscription of a member shall be in arrear for one year he shall cease to be a member of the Association.**

In the past, through failure to pay their subscriptions when due, the Association has been in the unfortunate position of having to remove the names of a number of members when it had been only a matter of inadvertence that the subscription had not been paid. The Officers of the Association will be pleased if this position can be avoided in future by members recognising the need to have their subscriptions paid in good time.

The majority of members find a banker's order the most convenient method of payment, and the General Secretary will be glad to send one of these forms to any member desirous of adopting this system.

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Weekly Wisdom

"... *A cautious man, he* [Sir Laurence Olivier] *forbears to say what style is; and I have searched my dictionaries of quotations without finding any observation that does not leave the darkness darker than it was before. I am therefore driven to a definition of my own, and shall assert that style is that quality which gives to a man distinction even when he is doing or saying something of no consequence. . . .*"—Harold Hobson, in *The Sunday Times*, January 23rd, 1949.

IN PARLIAMENT

Pet Animals Bill

Inspection of Shops and Sale Under Licence

The text of a private member's Bill to regulate the sale of pet animals and entitled the Pet Animals Bill was published on Tuesday of last week.

It was presented by Brigadier Peto, Conservative member for Barnstaple, supported by several Conservative and Labour members, and seeks to prohibit the sale of pet animals except under licence from a local authority. The Bill also provides for the inspection of pet shops by a veterinary surgeon, constable, or any officer of an animal protection society, authorised by a local authority. Where the same premises are inspected under this subsection on two occasions within a period of seven days, it is proposed that the second inspection should be carried out by a veterinary surgeon.

A schedule to the Bill sets out the rules it is proposed shall be observed by occupiers of pet shops. These include regulations against the sale of unweaned animals, the sale of cats, dogs and chicks under seven days old to children; against keeping animals in cellars or confined in an inadequate space, exposing them to excessive sunshine or artificial light, or depriving them of warmth. It is suggested that the buyer should be informed of the approximate age of the animal before purchase.

In addition to regulations affecting the sanitary condition of pet shops there is a stipulation in the Bill that no animal not in a sound and healthy state shall be sold, and that any animal which dies or falls ill within three days of purchase shall be presumed unfit to be sold, failing evidence to the contrary. The Bill applies to any bird, beast, reptile or fish. It is the first on the Order Paper for Friday, March 18th.

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Anti-Blood Sports Bills

As indicated in our Notes Columns this week, there is a mounting degree of opposition to these Bills in the rural areas. The first is the Protection of Animals (Hunting and Coursing) Bill, introduced by Mr. Seymour Cocks, which was due for debate on second reading in the House of Commons on Friday (after publication of this issue). A short measure of four clauses, its object is to prohibit the hunting of any deer, otter, or badger with hounds, or the coursing of any hare or rabbit, for purposes of sport. It makes no reference to fox-hunting, and a separate private member's Bill to abolish that sport will come before the House next month.

Proposed Penalties

The first clause of the Bill reads:—"If any person for the purpose of sport causes, procures, assists at, or takes part in the hunting of any deer, otter, or badger, or the coursing of any hare or rabbit, every such person shall be guilty of an offence and shall be liable on summary conviction to a fine not exceeding £25, or to imprisonment for a period not exceeding three months, or to both such fine and imprisonment."

The next clause provides that if in the opinion of the Minister of Agriculture it is necessary to do so to safeguard property or for the production or storage of food, the Minister may make regulations authorising the destruction of deer, otters, or badgers in areas and by methods to be specified. "Hunting" is defined as meaning the pursuit, attack, or killing of any deer, otter, or badger with hounds. The Bill's definition of "coursing" is: "The pursuit or attack or killing by hounds of any hare or rabbit as to which previous steps have been taken to reduce it into possession or to circumscribe the area of its free movements." It is proposed that the Act should come into operation on a day to be fixed by the Minister but not later than June 30th, 1950. It is not to extend to Scotland or Northern Ireland.

The Government left the decision on second reading to a free vote of the House.

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Humane Slaughter of Animals

In the House of Lords on Wednesday of last week Lord Dowding called attention to the unnecessary suffering still being inflicted on animals slaughtered for food, and moved for Papers.

He said it was nearly a year since he addressed the House on that subject, and he thought the time had now come when another word might be said upon it. Things were much the same as they were a year ago, but there was one notable exception: he referred to the protection which had now been given to sheep and lambs. In March of last year, a confidential letter was sent out from

the Ministry direct to slaughterhouses. That instruction was now on public record. So, if effective inspection of slaughterhouses was in operation, the situation was satisfactory in that respect. Broadly speaking, it meant that in no licensed slaughterhouses, except under Jewish rites, to which he would refer later, could any such animal be killed with the knife without first being stunned. In other respects, however, the situation in many places was lamentable. There was serious seasonal overcrowding and the condition of some of the buildings was disgraceful. He would like to ask what were the plans and what was the time-table for the action which was to be taken with regard to slaughterhouses as the result of the Lucas Report. There were also a very large number of animals killed every year outside slaughterhouses. When he spoke last year, a new Regulation was just coming into being. It dealt with the prohibition of slaughtering animals outside slaughterhouses except under licence and by licensed slaughterers. It seemed to him then that that was a unique opportunity for adding one more proviso—" and that a licensed slaughterer shall provide himself or be provided with a humane killer." It was disheartening that no such action was taken. He wondered whether the Home Secretary would relax the firearms regulations in order that the user of a humane killer should not be included.

Why must this cruelty continue? There were some cases of cruelty or alleged cruelty that one could at least understand. Consider the practice of putting hens to live in 18-inch boxes; and of keeping cows imprisoned for life so that they never saw a green field. At any rate, there was the motive, the incentive of greed. When the Government refused to legislate so that a horse must be given an anaesthetic before being castrated, they did so because of the objection which came from people who were unwilling to pay the few shillings extra which an anaesthetic involved. They could abominate those practices, but they could at least understand them. But who profited in any way from the infliction of suffering on animals in the process of slaughter? Nobody could plead necessity. It had already been abolished inside the slaughterhouses. If anybody could not afford a humane killer, it could be borrowed gratis.

These miserable conditions could be attributed only to callousness and inertia. We must put our house in order in this respect, for until we had done so we were in no position to criticise the ritual slaughter by the Jews and the Moslems, to which he must now refer.

Ritual Slaughter

As regards the Moslem slaughter, he had very little to say. Some little time ago the Imam of the Woking Mosque, who he imagined might be regarded as speaking for his co-religionists, put up a public notice to the effect that the preliminary stunning of animals by the use of the humane killer did not vitiate the Moslem rites, and that the flesh of such animals was lawful for Moslems to consume. But with the Jews the situation was very different.

These accusations of cruelty fell under two distinct heads. There was the preliminary casting, during which the animal was thrown and its head wrenched round into the appropriate position for the final act; and there was the killing itself. The killing was done by a Jewish official, but the casting and the preparation of the head was done by British slaughtermen before the Jewish official did his work. This duty many performed with the greatest distaste. There was an idea that constant application to their duties would render slaughtermen callous and inhumane. He did not think that that was generally the case. After he spoke last year on this subject, he received a letter from a slaughterman in a big Midlands town. He said:

"It is with deep interest that the slaughtermen at the . . . abattoir read the Press statement of your criticism in respect of the Jewish method of slaughtering animals. They feel that both the Jewish and Mohammedan methods should be definitely limited, as only men who have to perform this inhumane method can realise the unnecessary suffering inflicted on the animals compared to our own method of shooting prior to the drawing of blood. On behalf of the . . . slaughtermen, I remain, yours faithfully . . ."

The Chief Rabbi was most sympathetic with regard to the preliminaries of the slaughter, and if His Majesty's Government would approach him, he was sure they would find that he would be most co-operative in regard to the increase of the use of the Weinberg pen. This pen was an apparatus in which the animal was driven; it was then inverted on a pivot, and the animal was put into the necessary position without this terrible and distressing struggle. In December last year, he asked a Question in that House as to how many of these Weinberg pens were in existence, and how many were regularly used. The answer he received was that 18 had been provided, and 17 were in regular use. He would ask His Majesty's Government to follow up this matter with the Chief Rabbi to see what could be done.

On the second part the actual killing, the Chief Rabbi was adamant. He (Lord Dowding) was not unprepared for such a reply, but he was surprised at the grounds on which his refusal was based. His own contention was that there is no mandate, either Biblical or Talmudic, for this ritual; that it is purely a priestly custom which should be modified with the progress of civilisation. But the Chief Rabbi did not follow this line at all. He said that animals did not suffer by this form of killing, and that unconsciousness supervened almost immediately. He produced impressive evidence from many doctors and scientists in support of his contention. But there were, of course, other doctors and scientists—he did not say equally eminent, because he was not a judge of such things—and he knew that they had made exhaustive dissections, and so on, and their opinion was based on the anatomy of the ox, which had large arteries at the back of the neck, protected by the vertebrae, which supplied blood to the brain for a considerable period after the great vessels of the throat had been severed.

Perhaps he might be permitted to read another letter, which was sent to him quite unsolicited from an officer who had just returned from Germany. It said:

"I have just returned from two years' service in Germany on the Control Commission. It may interest you to know that one of the first things we did in Germany, under Jewish pressure, was to repeal the German laws enforcing the humane killing of animals so as to enable the Jews to kill animals without using the humane killer as a safeguard. As a safeguard, they were supposed to use a special casting pen which is said to alleviate the animal's suffering somewhat, but this has in fact never been used. One of our veterinary officers there insisted on having an animal's cords cut"—those are the cords by which its legs were fastened—"immediately after its throat had been slit by the Rabbi, to test how long it retained consciousness. It rose to its feet and rushed out of the slaughterhouse, and was on its legs for just over fifty seconds before it finally collapsed. Before having its throat cut, the ritual is for it to be thrown on its back and the vet. told me the animal's struggles were horrifying to witness. Cannot we stop this, there and here also? The Germans who know about this say 'So this is what the British fought the war for.'"

He thought the Jews had always recognised the suffering caused by these preliminary operations, and he believed he was right in saying that the Weinberg pen was provided as a result of a competition for a reward offered by the Jewish authorities. But about the same time a second reward was offered, for a device to mitigate the pain of the actual killing. The strange thing was that the person who offered that reward was no less than the chief of the Shechita Board (which is the Jewish organisation which controls this ritual slaughter). His name was Lord Swaythling.

He had an interesting piece of new information which had reached him recently—in case it was suggested that this was against the Jewish religion and that the objections could not be overcome—and that was that the use of the humane killer in the Jewish ritual slaughter had actually been started in America, in one place at any rate. In order that the name might be on record it was Morris Rifkin and Sons Incorporated, of South Street, St. Paul, Minnesota, and the Rabbi under whose supervision work was carried out was Rabbi J. B. Hurvitz. The head of the firm wrote:

"We have used the humane killer on all the cattle which are Kosher killed. Truthfully, we have been more than satisfied."

When he last spoke, England was held up by the noble Earl who replied as being in the forefront of the nations with regard to humanity to animals. This claim rather took his breath away, and he was not in a position to deal with it in an immediate reply. Since then he had made some enquiries and he found that in Norway, Switzerland and Spain, this Jewish ritual killing was absolutely forbidden; and in Sweden the animals were gassed before they are killed.

Earl Bathurst said that the condition of slaughterhouses in this country, on the average, was deplorable. Efficient slaughtering meant humane slaughtering. The reason why our slaughterhouses were inefficient—or, rather, why efficient slaughterhouses were not in existence—was entirely due to the lack of policy from the Minister of Food, who runs and is responsible for slaughterhouses.

The Centralised Factory Abattoir

He did not want it to be thought that all slaughterhouses were immediately inadequate, or that the conditions in all of them, in either cruelty or deficiency, were immediately deplorable. But

on the whole they were not as efficient as they should be. He believed, both from his own experience and also from the opinion of experts, that some form of centralised factory abattoir system was necessary throughout the country. He admitted that special premises would have to be designed to meet this need of centralised slaughtering. It seemed that the best and most economical sites for them would be in the centre of the producing areas—that is, the agricultural areas—and on the outskirts of heavy industrial areas. It would be no easy matter to arrange these districts and situations for slaughterhouses, and he would suggest that the interest of already-established market towns in agricultural centres should be looked after.

In the factory abattoir there was a mechanical stunning pen in use. This was, in the first place, the most efficient animal-slaughtering device; in the second place, it was the most economical; and in the third place, it was the most humane. The captive-bolt pistol was used throughout. There were adequate facilities to employ an expert staff the whole time throughout the year and for every day of a five-day week. This staff would consist of expert slaughtermen, veterinary officers, drovers, dressers and meat inspectors; and naturally, by reason of their very expertness, they could improve the efficiency of such an abattoir. Where there was a large-scale or relatively large-scale killing, expert labour could be afforded. The animals spent the minimum possible time moving from the hoof to the hook in the big killing-rooms. Lairage was the best possible size for dealing with a large number of animals in a large space.

There must be adequate water, suitable allowances made for the heavy killing season in the autumn, and adequate casualty-killing facilities. This was a very important point. A great deal of the meat that we ate was killed together with diseased carcases right on the very next part of the killing floor itself. Lastly, by-products could be most efficiently and economically put to good use.

He believed that the ideal operator of such an abattoir was the local authority. The slaughterhouses would have to be under the most strict regulation of the Minister of Food and the Minister of Agriculture; but it was only from centralisation that there could be obtained a sufficiently high standard of humaneness and efficiency in the slaughterhouse system.

It was not the actual killing that was inhumane. The apparent terror was due entirely to rough handling, to the shouting and the beating and so forth that was employed by slaughtermen and drovers, working under most inadequate conditions, in very limited space, and in the most restricted time before actual slaughter. In a factory abattoir, all those conditions were completely avoided. The animal walked straight from a pen to the man with the mechanical stunner. There was no trouble, no beating, pushing, prodding or shoving whatsoever.

Electrical stunning was a system used to a large extent with pigs in bacon factories when the slaughtering was on a large scale. Electrical stunning was certainly efficient; it was also economical, for the large scale pig-killer; but so far it was questionable whether it was actually humane. Mr. E. O. Longley, under the auspices of the University Federation of Animal Welfare, was carrying out investigations in this matter at the Bristol Institute of Neurotics. He would earnestly recommend that opinion be reserved upon the electrical stunning methods until further data was available.

Lord LUCAS, Lord in Waiting, said what was wrong with the slaughterhouses of this country was a legacy of the past, when they numbered 16,000. Now there were 600 controlled by the Ministry of Food, managed by competent officials, and subject to supervision. The slaughterhouses were adequate for ten months of the year, but there was a great increase in killings during October and November. They were badly sited, but all were being modernised.

The Home Secretary was adamant that the firearms law could not be altered: all the authorities were against it, on the grounds that the humane killer was a dangerous weapon in the hands of inexperienced operators.

The Government were not prepared, after taking everything into consideration, to prohibit the Jewish method of slaughter. It would deprive the orthodox Jews of such supplies of meat as their religion permitted. On the preliminaries to ritual killing the Government were not satisfied that there was not the possibility of cruelty such as to be an affront to the public conscience. There were about 49 slaughterhouses under the Ministry of Food where slaughter took place. Only 17 were equipped with an approved pen, but 80 per cent. of Jewish meat came from there. The Government had decided that as soon as practicable the provision of beef to meet Jewish ration requirements should be conditional on Jewish communities providing an approved casting pen for ritual slaughter of cattle.

About 500 to 600 sheep were killed every week in Government slaughterhouses for Muslim consumption and they were killed by the Jewish method. If the Muslims were prepared to agree to an alternative method the Government would be willing to receive representations.

Lord Dowding had raised a question which he thought was rather wide of the Motion, but he would not like him to think him guilty of the discourtesy of not referring to it. He spoke of the castration of horses. Their Lordships would remember that when the Veterinary Surgeons Bill (now the Veterinary Surgeons Act) was before their House, this particular subject was discussed at some length, and he himself was responsible for moving an Amendment to bring it under closer control. At the present time animals, ranging from two years for horses and six months for others, could not be castrated over that age except by a veterinary surgeon or a veterinary practitioner. That was where the matter stood to-day. If it was considered that this needed revising, then the proper representations would have to be made to the appropriate authorities.

The motion was, by leave, withdrawn.

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Milk (Special Designations) Bill

In the House of Commons on Monday last Dr. EDITH SUMMERSKILL, Parliamentary Secretary, Ministry of Food, moved the second reading of the Milk (Special Designations) Bill, which has passed through the Lords. She said that the Bill could be regarded as ancillary to the National Health Service Act as it would have the effect of reducing the incidence of tuberculosis, disablement, and even the death-rate. It was a reform of great social significance and she would always think of it as a "Save the Children" Bill. A recent survey had revealed that the number of deaths from milk infected by the tuberculosis bacillus was 1,500 a year, and many more thousands were crippled. So far as the child population was concerned the percentage was ten times greater in the rural areas, where more milk was drunk than in London. Dr. Summerskill then proceeded to outline the terms of the Bill, which limits the sale of milk, in areas to be specified by the Minister, to classes of milk which are specially designated (*Vet. Rec.* **60.** 652). The debate followed closely along the lines of that on second reading in the Lords (*Vet. Rec.* **60.** 689), but the following brief excerpts were noteworthy:—

Mr. HOPKIN MORRIS said that the preservation of the rights of the small trader and the penalty clause in the Bill merited serious consideration.

Mr. ORR-EWING said that an impression had been left that the overwhelming majority of tuberculosis cases could be traced to milk.

Dr. SUMMERSKILL: One per cent. of pulmonary tuberculosis can be attributed to infected milk, and 25 per cent. of surgical tuberculosis.

Mr. ORR-EWING: Does that mean "traced" to the milk?

Dr. SUMMERSKILL: Yes, the organism was the bovine organism.

Mr. W. J. BROWN emphasised that to get clean milk it was necessary to tackle such problems as water supply on the farms, improved farm buildings, cleanliness in the handling of milk, and the destruction of tuberculosis infected herds. The present Bill might easily slow down or divert attention from those important matters.

Mr. STRACHEY, Minister of Food, replying to the debate, said they could not expect a complete clean up of the milk supply within a shorter period than five to ten years. This was a long time to tolerate unsafe milk, but they were giving the agricultural and trade interests time to put their house in order before introducing compulsory powers. This Bill made a start in ridding the country of what had been in the nature of a national disgrace.

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Soil Erosion in Africa

On the motion for the adjournment of the House of Commons on February 17th, Mr. Rees-Williams, Under-Secretary, Colonial Office, replying to Mr. Skeffington, who raised the question of soil erosion in East Africa, said that the Colonial Secretary wanted to ensure that, in this vast area which might possibly be opened up for cattle and husbandry, the same over-stocking and soil erosion did not take place as in the old areas. He had therefore invited the Governors in East, West, and Central Africa to meet in Nairobi in June to discuss land utilisation and stocking policy. Another conference would be held with particular reference to mixed farming in West Africa, which might be possible through the new drug antrycide.

Questions

New Cars (Veterinary Surgeons)

Brigadier MEDLICOTT (Feb. 14th) asked the Minister of Supply whether he is aware that veterinary surgeons in Norfolk are finding it difficult to do their work adequately through inability to obtain delivery of new cars; and if he can hold out any hope of improved supplies in the near future.

Mr. G. R. STRAUSS: There is no intention at present to increase the supply of cars to the home market. The motor industry is, however, prepared to give special consideration to urgent requirements of veterinary surgeons sponsored by the National Veterinary Medical Association. (*See also our Notes and News columns.*)

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ATTESTED HERDS

Sir R. GLYN (Feb. 13th) asked the Minister of Agriculture whether it is the policy of his Department to encourage farmers to subject their cattle to the ordinary system of tuberculin testing; what proportion of the dairy herds in England are so tested; and what steps he proposes to take to increase the number of cattle so classified.

Mr. T. WILLIAMS: Yes. Farmers are encouraged strongly in this direction both by advice and by the premium of 4d. a gallon paid on milk from herds that have successfully passed the tests. What proportion of such herds are dairy herds I cannot say exactly, but such herds provided over 21 per cent. of all milk sold off farms in England and Wales in the year ended September, 1948.

Sir R. GLYN asked the Minister of Agriculture if he will give the figures of the number of store cattle imported from Eire during the last six months, compared with the similar period in 1947 and 1946; and whether any segregation arrangements are made for cattle which have passed tuberculin testing prior to embarkation provided consignments shipped are not subject to infection.

Mr. T. WILLIAMS: During the last six months 98,000 store cattle were landed in Great Britain direct from Eire, compared with 96,000 and 147,000 in the corresponding period (August—January) a year and two years ago, respectively. Under whatever conditions cattle which have passed a tuberculin test in Eire may be transported to attested farms in this country, they are required to be isolated on arrival at those farms pending official test not less than 60 days later.

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BLIND PERSONS (GUIDE DOGS)

Mr. EDWARD EVANS (February 17th) asked the Minister of Health the number of guide dogs for the blind in use in England and Wales; how many training establishments are available and how they are financed; how many blind persons are on the waiting list for guide dogs; and what is the cost to the blind person to secure one.

Mr. BEVAN: The Guide Dogs for the Blind Association maintains a training establishment by voluntary subscriptions and the sale of dogs. About 160 of their dogs are in use in this country and they have some 200 suitable blind persons on their waiting list. Blind persons selected to receive dogs are invited to contribute to the cost but selection does not in any way depend on financial status.

Mr. EVANS: Are local authorities eligible to contribute to the cost of this service?

Mr. BEVAN: I do not think so at the moment but I will certainly enquire into that.

NOTES AND NEWS

Diary of Events

Feb. 26th.—Meeting of the Society of Women Veterinary Surgeons at the Royal Veterinary College, N.W.1, 2 p.m.

Feb. 26th.—Scientific Meeting of the Nutrition Society (Scottish Group), in the College of Domestic Science, 1, Park Drive, Glasgow, 11 a.m.

Mar. 2nd.—Annual Meeting of the Lancashire Division, N.V.M.A., at Liverpool (Geology Lecture Theatre, Brownlow Street), 2.30 p.m.

Mar. 2nd.—Meeting of the West of Scotland Division, N.V.M.A., at Glasgow Veterinary College, 6.30 p.m.

Mar. 3rd.—Meeting of the Central Veterinary Society at the Royal Veterinary College, Camden Town, 6 p.m.

Mar. 4th.—Annual Meeting of the South Wales Division, N.V.M.A., at Carmarthen (Dolwar Café), 2 p.m.

Mar. 9th.—Meeting of the Southern Counties Division, N.V.M.A., at Bournemouth, 6 p.m.

Mar. 9th.—Meeting of the Association of Veterinary Teachers and Research Workers (Scottish Regional Group), in the Glasgow Veterinary College, 2.30 p.m.

Apr. 5th, 6th and 7th.—Quarterly Meetings of Council, R.C.V.S.

Apr. 20th, 21st and 22nd.—Quarterly Meetings of Committees and Council, N.V.M.A., in London (Meeting of Council, April 22nd).

Apr. 23rd.—Association of State Veterinary Officers: Annual Meeting at the Royal Veterinary College, Camden Town, 2 p.m.; Annual Dinner at the Criterion Restaurant, Piccadilly, 6.30 p.m.

June 1st (Wednesday).—Annual General Meeting of the Royal College of Veterinary Surgeons.

June 1st, 2nd and 3rd.—Quarterly Meetings of Council, R.C.V.S.

Aug. 8th to 13th.—Fourteenth International Veterinary Congress, Central Hall, Westminster, and Church House, Westminster, London, S.W.1.

Aug. 12th to 15th.—Sixty-seventh Annual General Meeting and Congress, N.V.M.A., in London.

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Quarterly Meetings of Council and Committees, N.V.M.A.

As indicated above, Council, N.V.M.A. will meet in London on Friday, April 22nd, with committees on the two days immediately preceding. Early intimation is given, in order that members concerned may make accommodation arrangements in good time, as the position remains difficult.

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Re: New Cars for Veterinary Surgeons

Despite the constant endeavours of the Association, the position with regard to the supply of new cars to veterinary surgeons is exceedingly unsatisfactory and even confused. Since the old permit system was discontinued, active representations have been made to the Ministry of Supply and the Society of Motor Manufacturers and Traders with a view to having the profession placed in the first priority class with doctors and midwives. At one period, it did seem as if success had been obtained, but in practice this has not come about. It was, however, obvious that some lower level of priority was being accorded to the profession until it was reported in the public press that only doctors and midwives were in a special category as far as new cars were concerned. The Association immediately entered its protest and did all it could to determine the true position. It seemed evident that some manufacturers were acting on an announcement made at a conference convened by the Ministry of Supply which had left the impression that "the needs of the veterinary profession are no longer so pressing."

Meantime, the following question and answer in the House of Commons were reported in *Hansard*:

> 95. *Brigadier Medlicott* asked the Minister of Supply whether he is aware that veterinary surgeons in Norfolk are finding it difficult to do their work adequately through inability to obtain delivery of new cars; and if he can hold out any hope of improved supplies in the near future.
>
> *Mr. G. R. Strauss*: There is no intention at present to increase the supply of cars to the home market. The motor industry is, however, prepared to give special consideration to urgent requirements of veterinary surgeons sponsored by the National Veterinary Medical Association.

Soon afterwards, the Association received a belated reply to its representations to the Ministry of Supply that a further deputation from the Association be received. The letter is quoted below:

Ministry of Supply,
Engineering Industries Division,
Shell Mex House,
Strand,
London, W.C.2.

February 15th, 1949.

Dear Sir,—I am sorry that a letter has not been sent previously in reply to yours of January 24th. The position on the preferential delivery of motor-cars is that manufacturers have been asked and have agreed to arrange prompt delivery of a motor-car to a doctor or midwife in any case in which the lack of a reliable car by the doctor or midwife concerned might result in the loss of human life.

Doctors and midwives are the only users covered by this arrangement. Apart from this priority the Trade has been asked to distribute motor-cars so far as possible in accordance with the importance of the need of the user and veterinary surgeons have been specifically mentioned as being a class of user important to the national economy. Moreover the industry has agreed through the Society of Motor Manufacturers and Traders, Ltd., to give special consideration to any particularly desperate cases sponsored by your Association. We understand that this is still being done.

It seems likely that the remarks to which you refer in your first paragraph arise from the fact that the Government has told the motor industry that it does not expect the special arrangements for doctors and midwives referred to at the beginning of my letter to be extended to veterinary surgeons or any other class of user but to be confined strictly to cases involving possible loss of human life.

I am sending a copy of this letter to the Society of Motor Manufacturers and Traders, Ltd.

Yours faithfully,
(Signed) M. Everard Taylor.

It will be noted that this letter does not refer to the request for an interview and leaves the matter in the same unsatisfactory position that the dealer will still decide where the need is greatest. The further letter sent to the Ministry by the Association is in the following terms:

N.V.M.A.,
36, Gordon Square,
W.C.1.
February 21*st*, 1949.

M. Everard Taylor, Esq.,
Ministry of Suppy,
Engineering Industries Division,
Shell Mex House,
Strand,
London, W.C.2.

Dear Sir,—I am obliged by your letter of February 15th regarding the preferential delivery of new motor-cars to veterinary surgeons.

In view of the special and peculiar need for motor-cars in veterinary practice, my Association is indeed disappointed that veterinary surgeons have not been placed in the same priority category as doctors and midwives, since they too are regularly open to call at all hours of the day and night.

At an interview which representatives of this Association had with Mr. Bennett of the Ministry of Supply on October 6th, 1947. it was clearly understood that veterinary surgeons would be placed in this special category. We appreciate that the general position in the home market deteriorated soon thereafter, but this does not seem a good reason for departing from the understanding then reached. In these circumstances, I would appeal to you to consider further the request made in my letter of January 24th for a deputation from this Association to be received.

Meantime, from correspondence reaching this office, it seems that some members of the Society of Motor Manufacturers and Traders are not fully aware—or are not making their agents fully aware—of your desire that the veterinary surgeon be placed high in the class of user important to the national economy. Would it be possible for you to make certain that the trade is aware that you wish special consideration given to cases of hardship sponsored by this Association? I feel that some action by you in that direction would materially alleviate a position which grows daily more desperate.

Yours faithfully,
F. Knight (*General Secretary*).

The S.M.M.T. is obviously ready to continue its co-operation with N.V.M.A. headquarters in this matter, but without a clear lead from the Ministry of Supply, the Society and the Association are seriously handicapped in their efforts to help members of the profession in this matter.

Members may be assured that the position is being watched and that every avenue is being explored.

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PERSONAL

Births.—Hastie.—At Cloud End Nursing Home, Aldington, on February 11th, 1949, to Pamela and Peter S. Hastie, M.R.C.V.S., Barrow Hill House, Ashford, Kent—a daughter (Carolyn Mary).

Munro.—At "Duart," Stornoway, Isle of Lewis, on February 10th, 1949, to Greta, wife of Christopher Munro—a daughter, Margaret Hilary.

Potter.—On January 27th, 1949, to Joy, wife of Robert Potter, M.R.C.V.S., 188, Gordon Road, Camberley, Surrey—a son, Robert Brian.

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Marriage.—Lovegrove—Rees.—On Saturday, February 19th, 1949, Miss M. R. Lovegrove, M.R.C.V.S., of 49, Endless Street, Salisbury, to Mr. L. F. Rees, M.R.C.V.S., of the same address.

Mr. W. K. Hunter.—Mr. W. K. Hunter, M.R.C.V.S., of the M.M.B. Cattle Breeding Centre at Moulton, near Northants, asks us to state that, with the consent of the Scottish Milk Marketing Board, he has withdrawn from appointment as their Senior Veterinary Officer. At one time he had intended going to Scotland, and the appointment has received some publicity.

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Exchange of Reprints.—A letter has been received from Professor D. H. K. Lee, Professor of Physiological Climatology in the Isaiah Bowman School of Geography and Lecturer in Physiological Hygiene in the School of Hygiene, The Johns Hopkins University, Baltimore 18, Maryland, intimating that he would be very glad to receive reprints of publications of workers in the field of human and animal environmental physiology in exchange for copies of publications from the schools with which he is associated.

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R.C.V.S. OBITUARY

Crowhurst, Cecil, 56, Earl Street, Maidstone, Kent. Graduated Edinburgh December 21st, 1905. Died February 18th, 1949; aged 78 years.

Drinkwater, Thomas, Greystones, New Mills, Near Stockport, Cheshire. Graduated April 15th, 1887. Died February 17th, 1949 aged 83 years.

Leech, Frank Herbert, Capt. late R.A.V.C., "Southwood," Newcastle Road, Nantwich, Cheshire. Graduated Edinburgh, May 21st, 1902. Died February 11th, 1949; aged 72 years.

The Late Mr. Ernest Wardrop, M.R.C.V.S.

Mr. Ernest Wardrop, of Outwell, Wisbech, Cambs, whose death we recorded with much regret in our last issue, enjoyed wide esteem not only as a practitioner but as a keen devotee of many sports and rural pursuits.

As a young Irishman, a wait to attain the age of 21 and take his final examination at the Dick College (after two years at Dublin) gave him the opportunity to take up his favourite pastime—training and riding horses, which also provided him with a practical introduction to his profession. After some time practising with the late Mr. Sam Bailey, trainer and veterinarian of Newtonards, Ireland, he became a professional jockey and competed with fair success in Ireland, and in jumping contests in the Dublin Show. To gain further experience before qualifying, Mr. Wardrop joined the Leicestershire Yeomanry and went to South Africa. Invalided home, he returned to college, took his final examination, and returned to South Africa during the South African war as a Captain in the R.A.V.C. After the war he joined the Boer War Exhibition Company as veterinary adviser. He later went with the company on a tour of the United States.

"On return to England," states the *Isle of Ely Advertiser* in the course of a tribute, "Mr. Wardrop followed his profession in Luton and Raleigh, and came to Outwell in 1907 as veterinary assistant to the late Mr. L. Holl. Mr. Wardrop purchased Mr. Holl's practice which he carried on until 1946.

"Fruit growing, farming and dairying claimed his interest, and his Ramsey Farm, Outwell, has been noted during the past 20 years. All Mr. Wardrop's undertakings bore the mark of efficiency, and attention to detail; he was the first man to produce Grade A milk in the village.

"Very partial to fast-trotting horses, he had driven the fastest trotter in the States during his stay there, and was competing in this country less than five years ago. Many people still remember 'Billy Bee,' the famous trotter driven by Mr. Wardrop, and many victorious finishes some 26 years ago; also his greyhounds winning the Barbican Purse, and Quanea Cup in coursing events. Mr. Wardrop had many successes with racing pigeons, and supplied carrier pigeons to the War Office during the last war. He won the Thurso and Lerwick races. During the war he took an active part in local gymkhanas."

Mr. Wardrop served on the Outwell (Norfolk) Parish Council, the Charity Trustees, and was a manager of the Beaupre School.

Indifferent health followed Mr. Wardrop's retirement in 1946, and for the past 17 months he had been very ill. Deep sympathy is felt for the widow and two married daughters in their loss.

The Late Mr. John L. Perry, M.R.C.V.S.

A Tribute

Mr. R. W. Hall, M.R.C.V.S., of Barry, sends us the following appreciation of Mr. John Lord Perry, of Cardiff, whose death we announced with deep regret in our last issue:—

The late Mr. J. L. Perry was the oldest and one of the best known veterinary surgeons in South Wales and as one who has known him for the past 50 years, both as a sincere friend and a helpful colleague, I pay tribute to his memory.

Mr. Perry led a very active life as a practitioner. Soon after qualifying in 1887, he became junior partner with Mr. Moir, and during this period of partnership an extensive town and country practice was established, especially amongst horses. On Mr. Moir's decease he carried on single-handed, but owing to advancing age, during the last few years he devoted himself mainly to small animals. He was closely associated with animal organisations, *e.g.*, the old Cardiff Horse Show, Cardiff Championship Dog Show, May Day Horse Show and R.S.P.C.A. Up to 1939 he acted as Hon. Secretary to the Cardiff Infirmary Animal Ball Committee and was thus the means of raising large sums of money for the benefit of the hospital. He was Chairman of the Glamorgan Wanderers Rugby Football Club and also no mean exponent of the game of billiards, being champion of Wales and Glamorgan about 40 years ago. He loved his flower garden and it was rarely one saw him without a buttonhole. He was a man of many parts. To a friend in need he was friend indeed.

. . . . .

Mr. Perry was cremated at Glyntaf on February 11th, the large assembly including the following members of the veterinary profession: Messrs. R. W. Hall (Barry), J. T. Fletcher, D. G. Llewellyn, J. Hughes, T. Young, Capt. W. J. Leyshon (Divisional Inspector, Ministry of Agriculture), and W. D. Rees (representing the National Veterinary Medical Association).

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THE ANTI-BLOOD SPORTS BILLS

Resolutions in opposition to the private members' Bills for the prohibition of blood sports are being passed by many agricultural societies and at field sport meetings. While the N.V.M.A. has not associated itself with any of these public protests, it has used its influence in support of the opposition to the proposed measures.

On February 10th, for example, 15 West Country hunts were represented at Exeter, when over 1,000 supporters of field sports sent a resolution of protest to the Prime Minister, the Minister of Agriculture and the Home Secretary, opposing the Bill to be introduced by Mr. Seymour Cocks on February 25th (after we had gone to Press with this issue).

The resolution stated that field sports formed a wholesome part of country life and resented the imputation of inhumanity laid against people who hunted. The suggested methods of controlling foxes and other animals would cause greater suffering. Freedom of choice should be retained by the individual in the matter of sports.

R.S.P.C.A.: "No Alternative to Fox Hunting"

The Royal Society for the Prevention of Cruelty to Animals stated last week that they supported, in principle, the Hunting and Coursing Prohibition Bill, which would prevent the hunting of wild deer, with hounds, stags, otters, badgers and hares, and the coursing of hares and rabbits. They have for years past been opposed to all these practices but they make reservations on two matters. If the hunting of wild deer is ended, adequate provision must be made for those animals to prevent their indiscriminate destruction by inhumane methods, and there must be power to destroy the "rogue" badger where he exists.

The R.S.P.C.A. also announce that they cannot support the Prohibition of Fox Hunting Bill because they have yet to find a satisfactory way of dealing with foxes. It is admitted that foxes must be kept down because of the damage they do in destroying poultry and lambs. The society could not advocate the use of poison because of the danger to other animals and birds. Foxes only lie in earths for about two months of the year, so that gassing and trapping would not be practicable. As regards shooting, experience of this method has not been satisfactory as the fox is a wily animal and there is the attendant danger of foxes being wounded and suffering a lingering death. They state that while they can never advocate the hunting of any animal, they must be practical and not seek to put an end to existing practices by substituting others that may be more unsatisfactory.

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N.V.M.A. PIG HANDBOOK ERRATUM

The plans published under the "Housing of Pigs," Shanks, P. L. (1942), *Vet. Rec.*, Vol. 54, No. 24, a copy of which appears in the N.V.M.A. handbook, No. 14—"The Husbandry and Diseases of Pigs"—were produced from buildings erected on Mr. A. A. McGuckian's farm at Cloughmills, Co. Antrim, Northern Ireland.

The Association much regrets that the caption which appears under that plan in the booklet was inserted there in error. It should have appeared under the plan on the following page.

ADDRESSES OF DISEASE-INFECTED PREMISES

The list given below indicates, first, the county in which are situated the premises on which disease has been confirmed, followed by the postal address and date of outbreak.

Foot-and-Mouth Disease:

Devon.—Fairview, Countess Wear, Exeter (February 17th); Haccombe, Red Hills, Exeter (February 18th).
Norfolk.—Frenze Hall, Diss (Feb. 16th).
Suffolk East.—Crown Farm, Leiston (February 18th).

Sheep Scab:

Cumberland.—East House, Deanscales, Cockermouth (Feb. 11th); North Row Farm, Bassenthwaite, Keswick (February 17th).

CORRESPONDENCE

The views expressed in letters addressed to the Editor represent the personal opinions of the writer only and their publication does not imply endorsement by the N.V.M.A.

Correspondents are requested to write as briefly as possible.

"BLUE NOSE" DISEASE IN THE HORSE

Sir,—In your last issue you record cases presented by Mr. G. N. Sutherland, M.R.C.V.S., to the Yorkshire Division which he introduced as "to all intents and purposes agreeing with the description of the disease as recorded by Kerr, McGirr and Lamont." From his description of symptoms we think there is no doubt that these were cases of "blue nose" disease. The name "blue nose" is not really a good one as often the colour is not noticed. We have seen several cases and in some there was a degree of coloration not unlike that produced around the orbit in the human as the result of a slight bruise; in others the colour was not evident. It may arise from an early cyanosis. The majority are seen in non-pigmented skins but we have also seen the condition in horses with pigmented skin (one case with Mr. Morrow, M.R.C.V.S., Coleraine, in a brown mare I noted particularly as it recovered).

Mr. Gilmore, M.R.C.V.S., Kircubbin, had also a case in a mare, in which severe sloughing of the skin of the muzzle and hind legs was occurring. The mare appeared to be responding to adrenalin but unfortunately the owner returned the animal to grass. It was still very weak and "staggery" and fell into a trench and had to be destroyed. We have had several cases which were apparently making this recovery but subsequently collapsed and died from evident weakness.

Mr. D. McKelvey, Lisburn, had a case in a mare which responded to adrenalin and finally made a complete recovery. The owner in this case was able to co-operate and give repeated injections of this agent. In this connection, Mr. Rae, who contributed to the discussion, has the right idea, but it is difficult to repeat injections every 20 minutes. We had to be content with injections every hour during the first 24 hours and then every four hours for the next three days; doses of 5 c.c. were used. Some skin sloughing took place over the muzzle and on the white socks of the hind legs. The animal recovered completely. One of the leading firms is preparing a special type of agent for experiment in 1949. It will be interesting to compare results with Anthisan which we also hope to use.

Yours faithfully,
H. G. Lamont.

Ministry of Agriculture for Northern Ireland,
Veterinary Research Division,
Stormont, Belfast.
February 22nd, 1948.

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SODIUM FLUORIDE FOR ROUNDWORMS IN PIGS

Sir,—I would draw your attention to what is considered to be a serious omission in the description of the use of sodium fluoride as a treatment for roundworms in swine, in the handbook on the Husbandry and Diseases of Pigs published by the N.V.M.A. in November, 1947.

The method as described, based on work carried out in America and Australia is incomplete, in that no mention is made of the *concentration* of the drug to be used in the dry feed.

Perusal of the original work of Habermann, Enzie and Foster (*Amer. J. vet. Res.* **6.** 129-144. 1945, and the *J. Amer vet. med. Res.* **107.** 57-66. 1945) shows that while a 1 per cent. mixture is safe and effective, "mixtures containing 4 to 5 per cent. are highly dangerous . . giving rise to a marked haemorrhagic

gastro-enteritis." Morgan and Grummer (*N. Amer. Vet.* **28.** 669-672. 1947) state that "the 1 per cent. mixture should be rigidly followed."

Further American work described subsequent to the publication of the N.V.M.A. handbook confirms these findings.

Since the profession has been exhorted in the columns of the *Record* in May and July, 1948, to recommend and to use sodium fluoride, I feel that if deaths are to be avoided, attention should be drawn to the correct concentration of the drug in the feed, particularly as pig-keepers frequently mix such medicaments with a relatively small quantity of food in order to ensure complete consumption.

Our experience would confirm that at the proper dosage level for age and weight and at a concentration not above 1 per cent., sodium fluoride is a safe, effective, simple and economical method of treatment.

Yours faithfully,

Boots Pure Drug Co., Ltd., N. M. Black, M.R.C.V.S.
Station Street,
Nottingham.
January 31st, 1949.

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The following communication has been received from Mr. P. L. Shanks, chairman of the Pigs Sub-committee of the N.V.M.A. Technical Development Committee:

The question of the optimum method of computing the dose of sodium fluoride for pigs is still undecided. In America it is recommended that the drug be given in a concentration of 1 per cent. in the food consumed by a pig in one day, whereas Roberts in Australia, conforming to the more usual procedure in therapeutic practice, made his observations on dose rates based on body weight, giving in his article on the subject (*Aust. vet. J.* Vol. 23, No. 4, pp. 82-90) very good reasons for his views.

Owing to the scarcity of pig food in Britain at the present time there is no uniformity in the amount of food allowed to pigs of various sizes and for that reason it would be erroneous to adopt the American method and assess the dose as a percentage of the amount of food consumed. The dosage rates based on weight range as recommended in the N.V.M.A. publication No. 14 should be followed and the dose should be mixed in the food *normally consumed by the pig in one day*. Should any of the food be left over it should be mixed with the next day's ration. The words "normally consumed by the pigs in one day" are important and were not included in the booklet.

All the Australian and American work has been carried out on pigs receiving dry meal: in Britain where swill or wet feeding is at present the common practice, observations should be carried out to see if modifications are necessary.

In a recent review on the use of sodium fluoride for worms in pigs appearing in the *American Journal of Veterinary Research* (Vol. IX, No. 33, pp. 379-385) it is stated that "excluding the three deaths from specific toxicity trials at levels of 4 and 5 per cent. there were four deaths from all causes following the administration of 629 treatments to 569 pigs." Some of these 569 pigs were treated with sodium fluoride at a concentration of 2 per cent. of the food. Experiments have shown that in America at a concentration of 1 per cent. and in Australia on a dose of 0·1 to 0·15 grams per pound body weight, both given in the normal daily ration the drug is perfectly safe and efficient with an ample margin of safety. Indeed, workers in both countries have stated that the pig is remarkably tolerant to sodium fluoride and that the tolerance is due to a "self limited consumption" owing to the unpalatability of the medicated food plus the pig's natural readiness to vomit irritant materials. Morgan and Grummer's statement as quoted by our correspondent is made without any reference to personal experience of toxicity. That, however, must not belittle the fact that sodium fluoride can cause poisoning and since our feeding methods are different from those in America and Australia it would appear that investigations should be carried out here to find efficient methods of administering the drug in wet or swill food.

Much useful information could be gained by veterinary practitioners publishing their personal experiences with sodium fluoride.

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VETERINARY DEGREES

Sir,—Mr. Leach's letter in your issue of the 12th instant on University Qualifying Degrees has raised a matter which will be of considerable importance to the profession in future years, when university degrees become the sole hall-mark of its status among scientific professions; and as Mr. Leach points out, it should not be too late even at this eleventh hour to have the present inadequate and inappropriate degrees, variously designated B.V.Sc., B.Vet.Sc. and B.Sc. (Vet.) by the different universities, altered to the more suitable and uniform degree of Bachelor of Veterinary Medicine, either in its English or Latin form.

I have seen only one other reference to the matter in your journal, namely, a letter from Professor F. H. Manley in your issue No. 28, Vol. 60, of July 10th, 1948, but I do know a number of teachers who hold views similar to those of Messrs. Leach and Manley, and it may well be that a large proportion of the profession is of the same opinion.

To me the present title of Bachelor of Veterinary Science is inappropriate in that it does not indicate to the public the special nature and purpose of the profession, namely, expert knowledge of veterinary medicine and surgery. Furthermore, it is inadequate in that it implies a standard of education comparable to that of the ordinary B.Sc. degree which requires but three or four years of study.

The institution of a title of Bachelorship of Veterinary Medicine, moreover, would lead to a Doctorate of Veterinary Medicine as a post-graduate degree, and give our graduates the opportunity of obtaining the appropriate title of Doctor of Veterinary Medicine, which is in use in the U.S.A., Germany and other countries, and which the profession was honoured by originally under the title of "Medicus Veterinarius."

Yours faithfully,

Veterinary College of Ireland, W. Kearney.
Ballsbridge, Dublin.
February 14th, 1949.

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PROCEEDINGS OF COUNCIL, R.C.V.S.

Sir,—When reading your issue of January 12th, I was pleased to note that the President of the R.C.V.S. had entertained the Minister of Agriculture and others to a luncheon. Is this a sign that the veil of secrecy is to be lifted? If so, I welcome it, for there are many members of the profession who will look forward with great anticipation to an account of the deliberations of the Council of the R.C.V.S. during the last few years.

Yours faithfully,

Royal Veterinary College, J. McCunn.
Royal College Street, N.W.1.
February 14th, 1949.

[We are glad to be able to announce the publication on March 26th of a special supplement of *The Veterinary Record*, containing the proceedings of the Council of the Royal College, and giving general information regarding the present state of the implementation of the Veterinary Surgeons Act.—Editor.]

DISEASES OF ANIMALS ACTS, 1894 TO 1937, AND AGRICULTURE ACT, 1937 (PART IV).

Summary of Returns of Confirmed Outbreaks of Scheduled (Notifiable) Diseases

Period	Anthrax	Foot-and-mouth	Fowl Pest	Parasitic Mange*	Sheep Scab	Swine Fever
Jan. 16th to 31st, 1949	4	—	30	—	4	1
Corresponding period in—						
1948	3	—	17	—	4	1
1947	4	21	—	—	8	—
1946	6	9	—	2	6	29
Jan. 1st to Jan. 31st, 1949	16	—	45	—	7	2
Corresponding period in—						
1948	6	—	54	—	10	3
1947	5	41	—	—	12	2
1946	15	13	—	3	9	48

Note.—The figures for the current year are approximate only.
* Excluding outbreaks in Army Horses.

Tuberculosis (Attested Herds) Schemes

The number of Attested Herds, *i.e.*, herds officially certified as free from Tuberculosis as at January 31st, 1949, was as follows:—

England	Wales	Scotland	Total (Great Britain)
13,259	12,413	11,143	36,815